

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 2002

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

07 - Operational System Development

0305111F WEATHER SERVICE

2738

COST (\$ in Thousands)	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
2738 Weather Service	19,057	11,202	14,488	16,617	16,824	17,131	17,458	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

(U) **A. Mission Description**

This budget activity funds operational development necessary to acquire, modify, and sustain segments of the Air Force Weather Weapon System (AFWWS). The AFWWS supports worldwide operations of Air Force and Army warfighters, as well as Special Operation Forces (SOF) and other government agencies, by providing observations and forecasts of terrestrial and space weather. The AFWWS provides fixed and transportable equipment supporting the Expeditionary Aerospace Force (EAF) concept with weather observing and forecasting capabilities at in-garrison and deployed locations. Efforts include: (a) Cloud Depiction and Forecast System II (CDFS II) upgrades satellite data processing, cloud depiction and forecasting weather support functions for operational commanders and classified national programs and replaces logistically unsupportable mainframe computers at the Air Force Weather (AFW) Strategic Center, Offutt AFB; (b) Global Theater Weather Analysis and Prediction System (GTWAPS) acquires theater weather models and associated hardware to improve AFW theater support capabilities; (c) Tactical Weather Radar (TWR) provides fixed and semi-fixed Doppler weather radar to support forward deployed combat operations worldwide; (d) Space Weather Analysis and Forecast System (SWAFS) builds space environmental support and modernizes software capabilities to meet warfighter requirements; (e) Product Tailoring/Warfighter Applications (PT/WA) provides user workstations capable of ingesting multiple sources of weather information to provide timely and precisely tailored weather products for the warfighter and supports the 'train as you fight' concept by assuring fixed and deployable systems have a similar look and feel; (f) Weather Data Analysis (WDA) provides a fused infrastructure for the assimilation of advanced models, radar, lightning, and satellite data into a single user interface for the timely analysis and production of tailored weather products; (g) Observing System 21st Century (OS-21) provides a range of weather observing capabilities, including automated capabilities, at fixed and deployed locations worldwide; (h) Small Tactical Terminal (STT) provides worldwide tactical users with a survivable 'first-in' source of meteorological satellite data, processed by small portable terminals in forward areas of conflict [STT funding aligned to PE 35111F in FY01. Prior year funding in PE 35160F, Defense Meteorological Satellite Program.]; and (i) Forecasting integrates advanced scientific numerical weather prediction capabilities into the AFW Strategic Center for automated and mission-tailored weather forecast products.

(U) Air Force Weather (AFW) programs are aligned under the five core competency areas of Weather Data Collection, Weather Data Analysis, Forecasting, Product Tailoring/Warfighter Applications, and Dissemination described in the AFW Mission Support Plan. Through this alignment, AFW ensures an integrated and systems-oriented approach to program management decisions. Weather Data Collection includes terrestrial and space environmental sensors including TWR, OS-21,

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<p>(U) <u>A. Mission Description Continued</u> and STT. Weather Data Analysis provides interoperability of AFW processing infrastructure with users and data sources. Weather Forecasting will enhance cloud forecasting capabilities and weather forecasting models and begin merging strategic and operational forecasting for greater efficiency. Product Tailoring/Warfighter Applications implements AFW Reengineering at the theater and tactical levels; at theater level provides timely, fine-scale weather products and services to operational commanders within a given Area of Responsibility; and at tactical level provides front-line weather information to warfighters in support of combat operations. These consolidations and realignments implement the CSAF-directed and approved AFW Strategic Plan.</p> <p>(U) <u>FY 2001 (\$ in Thousands)</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">(U) \$400</td> <td>TWR: Completed development of initial system interfaces with forecasting and analysis systems (Weather Data Collection)</td> </tr> <tr> <td>(U) \$1,349</td> <td>OS-21: Developed and integrated interfaces of component sensor systems (Weather Data Collection)</td> </tr> <tr> <td>(U) \$2,342</td> <td>WDA: Completed development of architecture for AFW Strategic Center, prepared Milestone B/C documentation, achieved Milestone B/C decision, and conducted risk mitigation assessments (Analysis)</td> </tr> <tr> <td>(U) \$5,817</td> <td>CDFS II: Continued development of cloud depiction and forecast software (Weather Forecasting)</td> </tr> <tr> <td>(U) \$900</td> <td>GTWAPS: Completed operational software development and achieved FOC (Weather Forecasting)</td> </tr> <tr> <td>(U) \$4,020</td> <td>SWAFS: Continued software development for incremental deliveries (Weather Forecasting)</td> </tr> <tr> <td>(U) \$3,863</td> <td>PT/WA: Continued software development and integration with regional and tactical weather systems (Product Tailoring/Warfighter Applications)</td> </tr> <tr> <td>(U) \$366</td> <td>STT: Continued support for integration of satellite weather data in tactical environment (Weather Data Collection)</td> </tr> <tr> <td>(U) \$19,057</td> <td>Total</td> </tr> </table> <p>(U) <u>FY 2002 (\$ in Thousands)</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">(U) \$2,689</td> <td>WDA: Begin software development for enhanced analysis infrastructure (Analysis)</td> </tr> <tr> <td>(U) \$390</td> <td>CDFS II: Complete development of cloud depiction and forecast software and achieve FOC (Weather Forecasting)</td> </tr> <tr> <td>(U) \$1,178</td> <td>Forecasting: Develop and integrate scientific advances in weather prediction capabilities (Weather Forecasting)</td> </tr> <tr> <td>(U) \$2,561</td> <td>SWAFS: Continue software development for incremental deliveries (Weather Forecasting)</td> </tr> <tr> <td>(U) \$4,384</td> <td>PT/WA: Continue software development and integration with regional and tactical weather systems (Product Tailoring/Warfighter Applications)</td> </tr> <tr> <td>(U) \$11,202</td> <td>Total</td> </tr> </table>			(U) \$400	TWR: Completed development of initial system interfaces with forecasting and analysis systems (Weather Data Collection)	(U) \$1,349	OS-21: Developed and integrated interfaces of component sensor systems (Weather Data Collection)	(U) \$2,342	WDA: Completed development of architecture for AFW Strategic Center, prepared Milestone B/C documentation, achieved Milestone B/C decision, and conducted risk mitigation assessments (Analysis)	(U) \$5,817	CDFS II: Continued development of cloud depiction and forecast software (Weather Forecasting)	(U) \$900	GTWAPS: Completed operational software development and achieved FOC (Weather Forecasting)	(U) \$4,020	SWAFS: Continued software development for incremental deliveries (Weather Forecasting)	(U) \$3,863	PT/WA: Continued software development and integration with regional and tactical weather systems (Product Tailoring/Warfighter Applications)	(U) \$366	STT: Continued support for integration of satellite weather data in tactical environment (Weather Data Collection)	(U) \$19,057	Total	(U) \$2,689	WDA: Begin software development for enhanced analysis infrastructure (Analysis)	(U) \$390	CDFS II: Complete development of cloud depiction and forecast software and achieve FOC (Weather Forecasting)	(U) \$1,178	Forecasting: Develop and integrate scientific advances in weather prediction capabilities (Weather Forecasting)	(U) \$2,561	SWAFS: Continue software development for incremental deliveries (Weather Forecasting)	(U) \$4,384	PT/WA: Continue software development and integration with regional and tactical weather systems (Product Tailoring/Warfighter Applications)	(U) \$11,202	Total
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<p>(U) <u>A. Mission Description Continued</u></p> <p>(U) <u>FY 2003 (\$ in Thousands)</u></p> <p>(U) \$1,799 OS-21: Develop remote weather sensor systems (Weather Data Collection)</p> <p>(U) \$1,500 WDA: Continue software development and integration of analysis infrastructure components (Analysis)</p> <p>(U) \$1,800 Forecasting: Continue integration of advanced weather forecast capabilities within AFW Strategic Center (Forecasting)</p> <p>(U) \$3,739 SWAFS: Continue software development for incremental deliveries (Forecasting)</p> <p>(U) \$5,650 PT/WA: Continue software development and integration of regional and tactical weather systems and integration with warfighter C4I systems (Product Tailoring/Warfighter Applications)</p> <p>(U) \$14,488 Total</p> <p>(U) <u>B. Budget Activity Justification</u></p> <p>This effort is in Budget Activity 7, Operational System Development, because it supports operational software development and system tests associated with the upgrade and replacement of currently operational systems, systems already in production, and systems with approved production funds in the DoD budget.</p> <p>(U) <u>C. Program Change Summary (\$ in Thousands)</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="text-align: center; width: 10%;"><u>FY 2001</u></th> <th style="text-align: center; width: 10%;"><u>FY 2002</u></th> <th style="text-align: center; width: 10%;"><u>FY 2003</u></th> <th style="text-align: center; width: 20%;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget</td> <td style="text-align: center;">19,942</td> <td style="text-align: center;">11,452</td> <td style="text-align: center;">14,588</td> <td style="text-align: center;">TBD</td> </tr> <tr> <td>(U) Appropriated Value</td> <td style="text-align: center;">19,942</td> <td style="text-align: center;">11,452</td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> a. Congressional/General Reductions</td> <td></td> <td style="text-align: center;">-250</td> <td></td> <td></td> </tr> <tr> <td> b. Small Business Innovative Research</td> <td style="text-align: center;">-700</td> <td></td> <td></td> <td></td> </tr> <tr> <td> c. Omnibus or Other Above Threshold Reprogram</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> d. Below Threshold Reprogram</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> e. Rescissions</td> <td style="text-align: center;">-185</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Budget Years Since FY 2002 PBR</td> <td></td> <td></td> <td style="text-align: center;">-100</td> <td style="text-align: center;">TBD</td> </tr> <tr> <td>(U) Current Budget Submit/FY 2003 PBR</td> <td style="text-align: center;">19,057</td> <td style="text-align: center;">11,202</td> <td style="text-align: center;">14,488</td> <td style="text-align: center;">TBD</td> </tr> </tbody> </table> <p>(U) <u>Significant Program Changes:</u> N/A</p>				<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Total Cost</u>	(U) Previous President's Budget	19,942	11,452	14,588	TBD	(U) Appropriated Value	19,942	11,452			(U) Adjustments to Appropriated Value					a. Congressional/General Reductions		-250			b. Small Business Innovative Research	-700				c. Omnibus or Other Above Threshold Reprogram					d. Below Threshold Reprogram					e. Rescissions	-185				(U) Adjustments to Budget Years Since FY 2002 PBR			-100	TBD	(U) Current Budget Submit/FY 2003 PBR	19,057	11,202	14,488	TBD
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<div style="display: flex; justify-content: space-between;"> Project 2738 Page 3 of 6 Pages Exhibit R-2 (PE 0305111F) </div>																																																									

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BUDGET ACTIVITY 07 - Operational System Development				PE NUMBER AND TITLE 0305111F WEATHER SERVICE			PROJECT 2738		
(U) <u>D. Other Program Funding Summary (\$ in Thousands)</u>									
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) Other Procurement, AF, Weather Service (PE35111F WSC 833070 & 838010)	35,869	44,769	50,159	45,073	46,161	46,954	47,897	Continuing	TBD
(U) <u>E. Acquisition Strategy</u> All major contracts within this program used precompeted DoD contract vehicles or were awarded after full and open competition. Programs support DII COE compliance and use an evolutionary acquisition strategy with a series of incremental IOC's and software releases. This approach accommodates refinement and prioritization of user requirements and improves adaptability to evolving commercial activities.									
(U) <u>F. Schedule Profile</u>									
		<u>FY 2001</u>				<u>FY 2002</u>			<u>FY 2003</u>
	1	2	3	4	1	2	3	4	1
(U) CDFS II FOC						X			
(U) GTWAPS FOC									
(U) Forecasting Milestone B/C				*					
(U) WDA Milestone B/C				*					
(U) SWAFS Spiral 1							X		
* - Denotes completed event X - Denotes planned event									

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)								DATE February 2002			
BUDGET ACTIVITY					PE NUMBER AND TITLE				PROJECT		
07 - Operational System Development					0305111F WEATHER SERVICE				2738		
(U) <u>A. Project Cost Breakdown (\$ in Thousands)</u>											
					<u>FY 2001</u>		<u>FY 2002</u>		<u>FY 2003</u>		
(U)	System Software Integration				1,579		1,429		1,878		
(U)	System Engineering Support				3,413		1,044		1,308		
(U)	Contractor Engineering Support				1,805		275		1,096		
(U)	Software Development				10,977		7,165		8,948		
(U)	Travel				287		213		182		
(U)	Program Management Support				946		1,026		1,026		
(U)	Laboratory Support				50		50		50		
(U)	Total				19,057		11,202		14,488		
(U) <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>											
(U) <u>Performing Organizations:</u>											
<u>Contractor or</u>		<u>Contract</u>									
<u>Government</u>		<u>Method/Type</u>		<u>Award or</u>	<u>Performing</u>	<u>Project</u>					
<u>Performing</u>		<u>or Funding</u>		<u>Obligation</u>	<u>Activity</u>	<u>Office</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	
<u>Activity</u>		<u>Vehicle</u>		<u>Date</u>	<u>EAC</u>	<u>EAC</u>	<u>to FY 2001</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	
<u>Product Development Organizations</u>									<u>Budget to</u>	<u>Total</u>	
									<u>Complete</u>	<u>Program</u>	
Sterling		CPAF		Jun 95	21,621	21,621	21,589	5,331	390	0	27,310
CCPL (TRW)		LOE		Dec 97	4,988	4,988	5,018	900	0	0	5,918
Raytheon		MIPR		Sep 98	1,184	1,184	1,017	367	0	0	1,384
CCPL (TRW/Raytheon)		LOE		Mar 00	TBD	TBD	2,813	3,795	3,937	0	TBD
Coastal Environmental		CFFP		Aug 01	327	327	327	114	0	1,283	TBD
CCPL (TRW/Raytheon)		LOE		Jan 00	1,267	1,267	202	1,066	0	0	1,268
TBD [WDA]		TBD		TBD	TBD	TBD	0	0	2,298	1,069	TBD
TBD [PT/WA]		TBD		TBD	TBD	TBD	0	0	0	4,056	TBD
CCPL (TRW/Raytheon)		LOE		Dec 99	4,780	4,780	10,123	3,577	1,856	3,057	TBD
AFRL		LOE		Sep 00	339	339	189	50	50	50	TBD
TBD [Forecasting]		TBD		TBD	TBD	TBD	0	0	1,178	1,800	TBD
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07 - Operational System Development				0305111F WEATHER SERVICE				2738	
(U) <u>Performing Organizations Continued:</u>									
<u>Support and Management Organizations</u>									
Electronic Systems Center (ESC)				642	659	838	838	Continuing	TBD
Space and Missile Systems Center (SMC)				479	389	216	185	Continuing	TBD
MITRE/Aerospace/ITSP				2,186	2,809	439	2,150	Continuing	TBD
<u>Test and Evaluation Organizations</u>									
(U) <u>Government Furnished Property:</u>									
	<u>Contract</u>								
	<u>Method/Type</u>	<u>Award or</u>							
<u>Item</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Delivery</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>	<u>to FY 2001</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Property</u>									
N/A				0	0	0	0	0	0
<u>Support and Management Property</u>									
N/A				0	0	0	0	0	0
<u>Test and Evaluation Property</u>									
N/A				0	0	0	0	0	0
				<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Subtotals</u>				<u>to FY 2001</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development				41,278	15,200	9,709	11,315	TBD	TBD
Subtotal Support and Management				3,307	3,857	1,493	3,173	TBD	TBD
Subtotal Test and Evaluation				0	0	0	0	0	0
Total Project				44,585	19,057	11,202	14,488	TBD	TBD

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